Research Note

First evidence for deep-sea hot venting or cold seepage in the Ross Sea (Bivalvia: Vesicomyidae)

Two large dead valves of an undescribed clam of the family Vesicomyidae were recently collected by a toothfish (family Nototheniidae) longline vessel and returned to NIWA by a Ministry of Primary Industries (MPI) observer. Using the Commission for the Conservation of Antarctic Marine Living Resources Identification Guide (CCAMLR 2009), the observer reported that the valves had a distinct sulphur smell, which, along with the location (Figure 1), suggests that the shells may have originated from or near an active seep and that living clams may still be there. The most complete valve (Figure 2) is very large (280 mm), and both

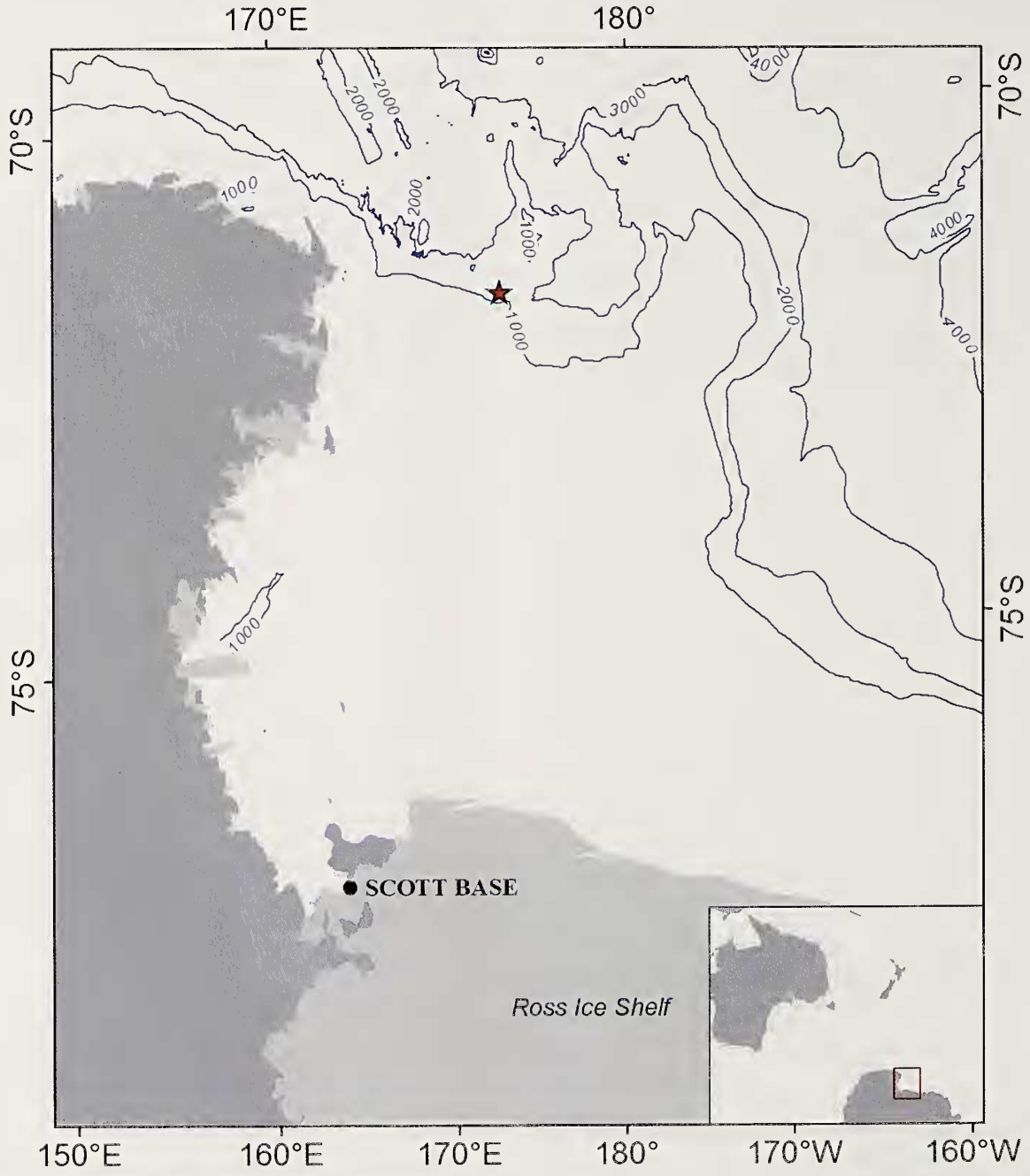

Figure 1. Location of vesicomyid clam sampled in the Ross Sea.

Figure 2. Vesicomyid clam from Ross Sea. Shell length = 280 mm.

are clearly old, blackish-stained, and with a sparse covering of encrusting bryozoans and calcareous polychaete tubes. Vesicomyid clams are found globally in chemosynthetic habitats using hydrogen sulfide for metabolism via symbiotic bacteria (Krylova and Moskalev, 1996; Krylova et al., 2010). While vent and seep species have been recorded previously from the Antarctic Region (Domack et al., 2005; Rogers et al., 2012), no vent or seep mollusks have been reported to date from the Ross Sea.

Apart from the enormous size, the Antarctic species is characterized by its exceptionally long ligament (length about 56% of shell length). In size, strongly posteriorly elongate shape, and general features of the shell, it most closely resembles some species of *Abyssogena* Krylova, Sahling, and Janssen, 2010, particularly *A. phaseoliformis* (Metiviér, Okutani, and Ohta, 1986) and *"Ectenagena" extenta* (Krylova and Moskalev, 1996) (lengths up to 180 mm and 235 mm: Krylova et al., 2010). These species have been found, respectively, in the Japan, Kurile, and Aleutian trenches at 4550–6329 m, the Gulf of Alaska, the Monterey Canyon, the Kurile Trench, and the Costa Rica subduction zone at 3000–4445 m. Both species are from cold seeps.

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